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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/665,212

09/18/2000

Eishiro Kuwabara

F-6653

4270

7590

05/20/2004

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122 East 42nd Street
New York, NY 10168

EXAMINER

VIDA, MELANIE M

ART UNIT

PAPER NUMBER

2626

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/665,212

Applicant(s)

KUWABARA ET AL.

Examiner

Melanie M Vida

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/18/00.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-16 is/are allowed.
- 6) ☒ Claim(s) 1-6, 17, 18 and 22-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement(s) (IDS) submitted on 3/28/02 has been considered by the examiner and is attached to this office action.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Image Processing Device for reducing show-through in Duplex, Multi-level Printing.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Figure 1 is missing a description of items **43, 24, and 425b**.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Item, **424g**, as it appears in **figure 1**, should be changed to 424y, as described in the specification on page 10, line 12.

Figure 2 has the following items that are mislabeled as compared to the description:

Item 36, "Color Correcting Component", should be labeled --35-- see page 12, line 11;

Item 37, "Output Color Selecting Unit", should be labeled --36--, see page 11, lines 1-7 and page 12, line 18;

Item 38, "Magnifying Unit", should be labeled --37--, see page 11, lines 1-7 and page 12, line 18;

Item 39, "Spatial Filter Unit", should be labeled --38--, see page 11, lines 1-7 and page 12, line 23.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

5. **Claims 6, 18, and 27-28** are objected to because of the following informalities: It appears that "setter" in lines 2-3 should be replaced with --setting--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 26-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

After thorough inspection of the description, it remains unclear to the Examiner what the applicants mean by "a predetermined common gradation lowering rate" as cited in **claims 26 and 29**.

Claim 27 recites the limitation "the common gradation lowering rate" in lines 6-7.

Claim 29 recites the limitation "the common gradation lowering rate" in lines 2-3.

There is insufficient antecedent basis for this limitation in the claim.

Claim 28 is rejected under 35 USC 112 for depending on claim 27.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an

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international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. **Claims 1-3, 6** are rejected under 35 U.S.C. 102(e) as being anticipated by Hamburg, US-PAT-NO: 6,434,269 B1, (hereinafter, Hamburg).

Regarding, **claim 1**, Hamburg, as shown in figure 1, teaches of a computer system (10), which reads on “an image processing device” for applying a process of color matching, erasing and decontaminating color data for a portion of the image enclosed within a tip region of a brush stroke series of tip applications, which reads on “applying a certain process to gradation data of a plurality of color components for each pixel of an input image data comprising:” (col. 6, lines 60-63; col. 7, lines 19-29). An application (30) can erase a feature of a digital image, and figure 2 is a flowchart of user and program steps for erasing a feature from a digital image, which reads on “unwanted pixel determining means”, (col. 7, lines 4-5). A brush tool over the area to be erased (52) includes a tip region to determine an erasure color, which reads on “for determining as to whether all the gradation data of the plurality of color components composing each one of the pixels of the input image data satisfy a unwanted gradation condition that is predetermined with respect to each one of the color components”, (col. 7, lines 19-29). Further, each pixel is composed of one or more components, (i.e. cyan, magenta, yellow, and black), which reads on “the judgment being made pixel by pixel; and”, (col. 5, lines 54-58). Finally, Hamburg teaches of formulae for a new color data, which reads on “unwanted gradation conversion means”, that calculates the new color value based on the old color value of the target pixel color, a color to be erased, and the color match value for the pixel, which reads on “for converting the gradation data

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of the plurality of color components of the pixel that has been judged to satisfy the unwanted gradation condition by the unwanted pixel determining means into a predetermined gradation which is set with respect to each one of the color components.”, (col. 9, lines 5-15).

Regarding, **claim 2**, Hamburg, as shown in figure 2, teaches a process flow chart for erasing a feature from a digital image, which reads on “an unwanted gradation condition setting means” that is used to determine if pixels have a color that matches the erasure color (i.e. having a color match value that is equal to one) are completely erased (alpha channel values are set to zero), pixels that match partially, (having a color match value that is between zero and one) are partially erased (alpha values are driven toward zero), which reads on “for determining a gradation condition of an unnecessary image data in the input image data to set the gradation condition as the unwanted gradation condition”, (col. 7, lines 16-29; col. 8, lines 38-64).

Regarding, **claim 3**, Hamburg teaches of background bleed through, caused by a color difference of the background of a transparent or translucent foreground object, which reads on “wherein the unnecessary image data includes an undertone portion in the input image data”, (col. 6, lines 32-35).

Regarding, **claim 6**, Hamburg teaches the flow chart of figure 2, which reads on “wherein the unwanted gradation condition setter means” has a color matching function, which reads on “includes an unnecessary data gradation detecting means” produces an output color match value that is indicative of the degree that the color associated with a given pixel matches the erasure color, a range of 0.0 to 1.0 inclusive, as shown in figures 3a to 3c, which reads on “for detecting a gradation range of the unnecessary image data with respect to each one of the color

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components based on the gradation data of the input image data to set the unwanted gradation condition.”, (col. 8, lines 10-16; col. 8, lines 20-36; col. 11, lines 19-21 and col. 11, lines 60-63).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 4-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamburg, US-PAT-NO: 6,434,269 B1, (hereinafter, Hamburg) as applied to claim 2 above, and further in view of Knox, US-PAT-NO: 6,101,283, (hereinafter, Knox).

Regarding, **claim 4**, Hamburg teaches the image-processing device of claim 2. Hamburg teaches of background bleed through, caused by a color difference of the background of a transparent or translucent foreground object, which reads on “wherein the unnecessary image data includes an undertone portion in the input image data”, (col. 6, lines 32-35). Hamburg fails to expressly disclose, “and a backside image portion in the input image data”.

However, Knox, as shown in figure 6, teaches show-through information from the backside, which reads on “and a backside image portion in the input image data”, (col. 4, lines 50-55).

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At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Hamburg's computer system (10) with Knox's categorization of unnecessary image data to include a backside image portion in the input image.

One of ordinary skill in the art would have been motivated to categorize unnecessary image data as an undertone portion and a backside image portion in the input image because a two sided document may have show-through defects, given the express suggestion of Knox, (col. 4, lines 44-49).

Regarding, **claim 5**, Hamburg teaches the image-processing device in claim 2, but fails to expressly disclose, "wherein the unnecessary image data includes a backside image portion in the input image data".

However, Knox, as shown in figure 6, teaches show-through information from the backside, which reads on "the unnecessary image data includes a backside image portion in the input image data", (col. 4, lines 50-55).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Hamburg's computer system (10) with Knox's categorization of unnecessary image data to include a backside image portion in the input image.

One of ordinary skill in the art would have been motivated to categorize unnecessary image data as a backside image portion in the input image because a two sided document may have show-through defects, given the express suggestion of Knox, (col. 4, lines 44-49).

11. **Claims 17-18, 22-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamburg, US-PAT-NO: 6,434,269 B1, (hereinafter, Hamburg) as applied to claims 1 and 6,

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respectively, above, and further in view of Matsuda, US-PAT-NO: 6,285,470 B1, (hereinafter, Matsuda).

Regarding, **claim 17**, Hamburg teaches the image-processing device of claim 1, but fails to expressly disclose, “the predetermined gradation is a lowest gradation outputtable by an image forming apparatus adapted to be electrically connected thereto”.

However, Matsuda, as shown in figure 7, teaches of a converting a reading density value to a value, 0, (i.e. zero) reproduction density, which reads on “the predetermined gradation is a lowest gradation outputtable by an image forming apparatus adapted to be electrically connected thereto”.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Hamburg’s image processing device (i.e. claim 1) with Matsuda’s predetermined gradation of zero.

One of ordinary skill in the art would have been motivated to adjust a reading density value to a zero reproduction density, in order to remove show-through artifacts in an area of brightness value, L_s , given the express suggestion of Matsuda, (see figure 7 and col. 8, lines 30 through col. 9, lines 50).

Regarding, **claim 18**, Hamburg teaches the image processing device according to claim 6, but fails to expressly disclose, “unwanted gradation condition setter means controls the unnecessary image data gradation detecting means to detect a unwanted gradation threshold value based on an upper limit of the gradation range of the unnecessary image data so as to set the unwanted gradation condition such that the unwanted gradation is a gradation lower than the unwanted gradation threshold value”.

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However, Matsuda, inherently teaches, “unwanted gradation setter means controls the unnecessary image gradation detecting means to detect an unwanted gradation threshold value based on an upper limit of the gradation range of the unnecessary image data so as to set the unwanted gradation condition such that the unwanted gradation is a gradation lower than the unwanted gradation threshold value”, as evidenced in that formula 6 calculates, a range of brightness values (L_S to L_P'), where show-through exists in a digital image, wherein a lower brightness threshold L_S is calculated based on subtracting a constant d from an upper gradation threshold value L_P' , and multiplying a constant c to the upper gradation threshold value, L_P' (col. 7, lines 15-21).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Hamburg’s image processing device (i.e. in claim 6) with Matsuda’s unwanted gradation condition setter means.

Regarding, **claim 22**, please refer to the corresponding rejection in claim 18, and further wherein Hamburg teaches a flow chart of user and program steps for erasing a feature from a digital image, which reads on “an adjusting pixel determining means”, (col. 7, lines 16-17). In step (56) an erasure color is determined, or a “keep color” (i.e. a color not to erase) can be determined by an object or feature having a consistent or distinct color, which reads on “for judging whether a pixel having gradation data that does not satisfy the unwanted gradation condition with respect to at least one of the color components is an adjusting pixel that satisfies a certain adjusting gradation condition which is predetermined with respect to each one of the color components”, (col. 7, lines 30-39). Additionally, a color match function outputs a color match value between 0.0 to 1.0 that indicates the degree the color matches an erasure color,

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which reads on “the judgment being made with respect to all the gradation data of the plurality of color components composing the pixel; and”, (col. 7, lines 64 through col. 8, lines 10).

Erasure step (60) and formulae for computing a new color value, which reads on “an adjusting pixel gradation conversion means” uses an erasure function such that pixels having a color that matches the erasure color are completely erased, pixels that partially match an erasure color are partially erased, and pixels that do not match the erasure color are not erased, which reads on “for converting each one of the gradation data of the plurality of color components composing the adjusting pixel into a gradation lower than the gradation of the adjusting pixel in the input image data”, (col. 8, lines 38-55; col. 9, lines 1-14).

Regarding, **claim 23**, please refer to the corresponding rejection in claim 22, and further wherein Hamburg teaches of pixels having a color that matches the erasure color are completely erased, which reads on “wherein the adjusting gradation condition sets the gradation lower than predetermined adjusting gradation threshold value”, (col. 8, lines 40-42).

Regarding, **claim 24**, please refer to the corresponding rejection in claim 23, and further, wherein Hamburg teaches the erasure color, which reads on “the adjusting gradation threshold value”, determines which pixels are erased based on having a matching color, which reads on “is determined based on the unwanted gradation threshold value”, (col. 8, lines 40-42).

Regarding, **claim 25**, Hamburg teaches that the new color value is calculated by a formulae, which reads on “the adjusting pixel gradation conversion means converts”, (col. 9, lines 1-15). Additionally, the color match can be performed in a first color space, which reads on “gradation data of each one of the color components of each one of the adjusting pixels into a gradation in accordance with the gradation in the input image data, based on a function of the

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unwanted gradation threshold value and the adjusting gradation threshold value as parameters with respect to each one of the color components”, (col. 10, lines 1-17).

Allowable Subject Matter

12. **Claims 7-16, 19-21, and 26-28** are allowed. **Claim 7** is allowed because of the histogram showing the frequency, number of pixels, vs. gradation with respect to each color component of the input image. **Claims 8-16** are allowed for depending on claim 7. **Claims 19-21** are allowed for depending on claim 7. **Claim 26** is allowed for the sets of predetermined common gradation lowering rate to convert gradation data. **Claims 27-28** are allowed for depending on claim 26.

Claims 7-16, 19-21, and 26-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 26-29 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bhattacharjya et al. US-PAT-NO: 6,546,132 B1, reduces bleed-through artifacts.

MacLeod et al. US-PAT-NO : 5,778,092, reduces show-through artifacts.

Sharma, US-PAT-NO: 6,288,798 B1, reduces show-through artifacts.

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Wilensky et al. US-PAT-NO : 6,721,446 B1, has an erasure and color matching functions.

Knox, US-PAT-NO: 5,646,744, reduces show-through artifacts.

Knox, US-PAT-NO: 5,832,137, mitigates show-through artifacts.

Mitsuyama et al. US-PAT-NO : 5,768,412, histogram for picking thresholds for image segmentation.

Cullen et al. US-PAT-NO : 6,348,980 B1, exploits bleed-through of image on back side of document for handling duplex documents.

Ancin, US-PAT-NO: 5,956,468, document segmentation system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie M Vida whose telephone number is (703) 306-4220. The examiner can normally be reached on 8:30 am 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly A Williams can be reached on (703) 305-4863. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Melanie M Vida

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Examiner

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MMV

mmv

May 12, 2004

KA Williams
KIMBERLY WILLIAMS
SUPERVISORY PATENT EXAMINER